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# WATER SUPPLY OUTLOOK

FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

for

MONTANA

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE and
MONTANA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with Federal, State, and private organizations listed on the inside back cover of this report.

APR. 1, 1965

### UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

To Recipients of Water Supply Outlook Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from advance estimates of the streamflow.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, up to 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

Streamflow forecasts are obtained by a comparison of total or maximum snow accumulation, as measured by snow water equivalent, to the subsequent spring and summer or snowmelt season runoff over a period of years. The snow water equivalent measured in selected snow courses provides most of the index to the streamflow forecast for the following season. More accurate forecasts are usually obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast procedure. Early season forecasts assume average climatic conditions through the snowmelt season.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions. Soil Conservation Service Reports may be secured from Soil Conservation (Service, 511 N.W.) Broadway - Room 507, Portland, Oregon 97209.

### PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS	ISSUED	LOCATION	COOPERATING WITH
RIVER BASINS			
WESTERN UNITED STATES	MONTHLY (FEBMAY)	PORTLANO. OREGON	_ ALL COOPERATORS
BASIC DATA SUMMARY	OCTOBER 1	PORTLAND, OREGON	_ ALL COOPERATORS
STATES			
AL ASK A	MONTHLY (MAR MAY)	_ PALMER. ALASKA	ALASKA S.C.D.
AR I ZON A	SEMI-MONTHLY (JAN.15 - APR.1)	PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOC ARIZ. AGR. EXP. STATION
COLORAGO AND NEW MEXICO	MONTHLY (FEBMAY)	_ FORT COLLINS, COLORAGO	COLO. STATE UNIVERSITY COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IDAHO	MONTHLY (JANJUNE)_	BOISE, IOAHO	IOAHO STATE RECLAMATION ENGINEER
MONTANA	MONTHLY (JANJUNE)_	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
NEVAOA	(YAMNAL)	RENO, NEVADA	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES DIVISION OF WATER RESOURCES
OREGON	( anut - , nat ) Yuhtnom	PORTLANO, OREGON	OREG. STATE UNIVERSITY OREGON STATE ENGINEER
UTAH	MDNTHLY (JAN JUNE)_	_ SALT LAKE CITY, UTAH _	UTAH STATE ENGINEER
WASHINGTON	MONTHLY (FEB JUNE).	SPOKANE. WASHINGTON	WN. STATE DEPT. OF CONSERVATION
WYDMING	MONTHLY (FEBJUNE)	CASPER, WYOMING	WYOMING STATE ENGINEER
	PUBLISHED B	BY OTHER AGENCIES	
REPORTS	ISSUED		AGENCY
BRITISH COLUMBIA	MONTHLY (FEBJUNE)		ES SERVICE, DEPT. OF LANDS, R RESOURCES, PARLIAMENT BLOG., CANADA
CALIFORNIA	MONTHLY (FEBMAY)	CALIF. DEPT. OF	WATER RESOURCES, P.O. BOX 388, IF.

### WATER SUPPLY OUTLOOK

### FEDERAL-STATE-PRIVATE COOPERATIVE SNOW SURVEYS

for

MONTANA

Report Prepared

Ву

Phillip E. Farnes Snow Survey Supervisor

and

Stanley E. Cook
Assistant Snow Survey Supervisor

Snow Survey and Water Supply Forecasting Branch
Soil Conservation Service
Box 855
Bozeman, Montana

Issued By

H. D. Hurd State Conservationist Soil Conservation Service Bozeman, Montana

J. A. Asleson, Director Montana Agricultural Experiment Station Bozeman, Montana



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# MONTANA WATER SUPPLY OUTLOOK as of April 1, 1965

The mountain snow pack west of the divide contains about 10 to 25 percent more water than it did last year at this time and is 10 to 30 percent above the 15 year average. Snow cover in the Kootenai River drainage, including that portion in British Columbia, is about 10 percent greater than a year ago and 7 percent above the 1948-62 average. The greatest snow pack, percentagewise, encompasses the headwaters of the Clark Fork River.

East of the divide the Missouri River headwaters have a snow pack about one-third greater than a year ago and 35 percent above average. Drainages tributary to the Missouri River below the junction of the Jefferson, Madison and Gallatin Rivers have a mountain snow pack that is about one-third greater than the 1948-62 average.

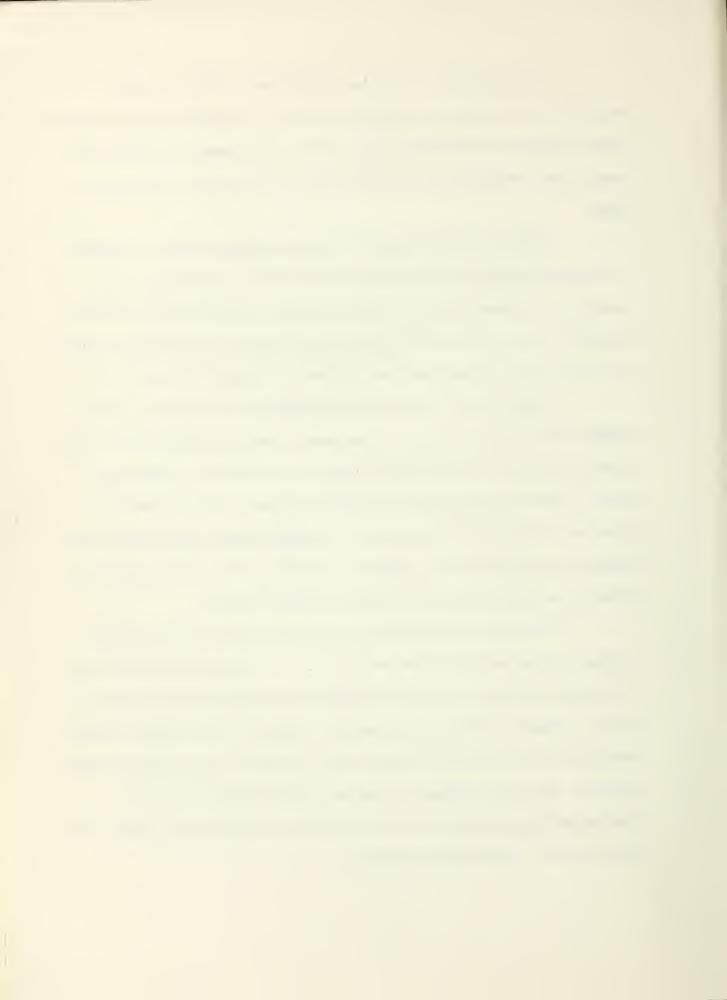


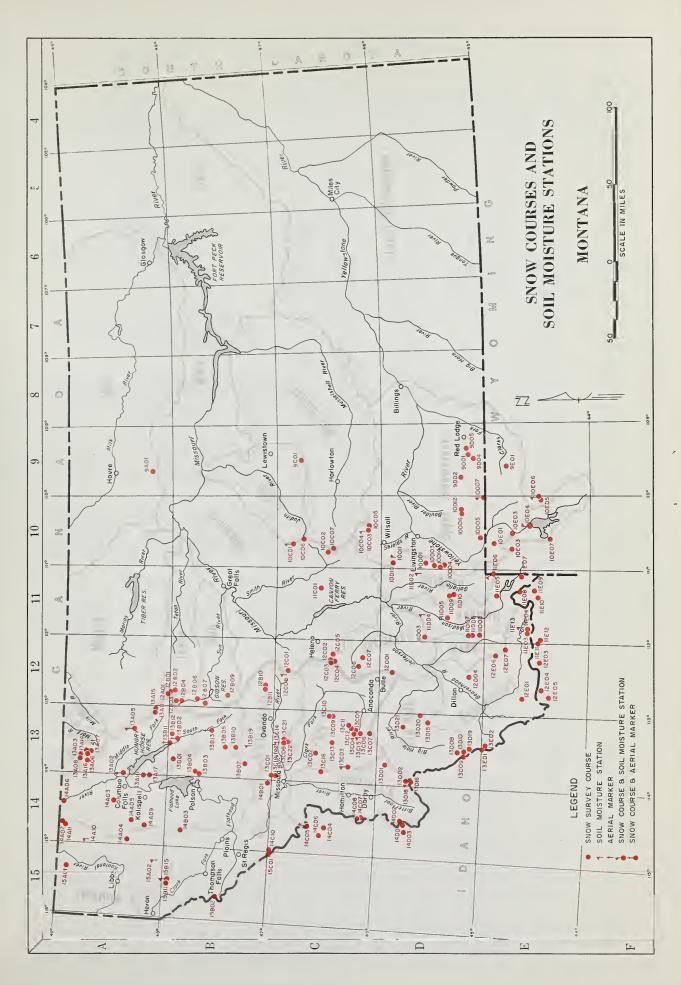
Irrigation water supplies coming from snowfed streams will be good to excellent over the entire state. The outlook for late season water supplies is especially good, as the above average high elevation snow is very dense and will resist melt more than would a less dense pack.

Runoff during the April through September period is forecast to be near average on the Kootenai River and its tributaries. The remainder of streams in the Columbia drainage, including the Flathead, Blackfoot, Clark Fork and Bitterroot are forecast to produce the second to fifth highest volume that has occurred in the past 30 years.

Runoff east of the divide is expected to be third to fourth highest in the past 30 years on headwater streams of the Missouri River. Streams tributary to the Missouri River are forecast to produce less runoff, ranking between fifth and eighth highest. The Yellowstone River and tributaries are forecast to produce between third and fourth highest volume since 1935, except on the Clarks Fork of the Yellowstone River where runoff should rank fifth or sixth highest.

Reservoirs are expected to be drawn down so that available storage can be used to reduce peak flows. The size of peak flows that occur this year will be largely dependent on temperatures and precipitation during the main snowmelt period. Below or near average climatic conditions will permit the large volume of runoff to pass down the river channels with little damage. Likewise, above average conditions, particularly heavy rains on a warm and ripe snow pack will cause rivers and streams to leave their channels.





# 1965 INDEX to MONTANA SNOW COURSES and SOIL MOISTURE STATIONS

SOIL MOISTURE STATIONS	Orelange Basin Number Elev. See. Ivp. Songe Bagen Dates V By 24	KOOTENAI RIVER COLUMBIA RIVBR BASIN	Bares 72ell 158154 3800 5 258 304 1964, Monthly 2 Nurph 1ee R. S. 144104 3000 5 248 259 1964, Monthly 2 Rawn R. S. 154028 3090 2 268 259 1964, Monthly 2 FLATHEAD RIVER	13,024 5600 24, 31M 19W 1956 13,05H 5250 34, 30M 14W 1950 81VER	Georgebon Lake 130134 6450 6 5N 13W 1962 worthy 1 Ludrech Ferest 13014 4100 11 13N 15W 1961 worthly 8 Sealay Lake 138199 6200 21 17N 15W 1963 worthly 2 Stelado Summit 1303M 7260 30 6N 17M 1964 worthly 1	8  TERROOI R VER   Gibbons Pess 130184 7100 4 25 194 1962 Honthly 1  Lolo Pess 146094 5250 11 108 244 1963 Monthly 1	BEAVERHEAD RIVER MISSOURI RIVBR BASIN	Lakoviov 11ELN 6700 23 145 2W 1962 Monthly 10		VER	College Site 110024 4856 18 2S 5E 1956 Monthly 1 [Wently-Dne Hile 11EO64 7150 1 11S 5E 1963 Honthly 6	RIVER MAIN STEM 120080 6350 16 NET NOTE NOTE NOTE NOTE NOTE NOTE NOTE		YELLOWSTONE RIVER  Battle Ridge 1001H 6020 32 2N 77 1960 Henthly 1  Richesk Bitzence 1000H 7890 33 95 142 1962 Henthly 6  Sitals River 1004M 5850 4 4N 105 1960 Henthly 1			1/ Masser 12, 2, 3, 4, 5, 5, 5, 6 refer to January 1, Pebruary 1, Haroh 1, April 1, Hay 1,	Mey 15 end June 1. Mumerels refer to Ageney thet sec	Soll Connervation Service 6. National Park Service     Vil. S. Forest Service 7. Montana Experiment Station     VI. S. Caloglad Service 8. Montana Service Prometry School	Hontene Power Company 9. U. S. Indian Service M - Soil Moiature	
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SNOW COURSES	Range	COLUMBIA RIVER BASIN	312 302 264 254 298	24W	184 194 184	22422	22222	150		15%	92 167	127	274	154 154 154 154 154 154	194		184 174 194 234 234 234	174	164 164 174		
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S	Elev.	ŏ	3800 3800 5000 4300 6000		6750 6750 5600 5500					7100	4200	7200	2300	2450 4650 4660 7260 7260 7260	7736 6500 6800 6800		6570 6570 6570		5565 5566 5866 5866		
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	Dreinage Besin & Course Name	4	Bares Creak Bares Treil Brush Creek Grewas Creek Red Mointein	FLATHEAD RIVER Baseo Peek	Begreen Many Camp Maery Desert Mountein Fetty Creek	Unsight Leke Cunsight Leke Nell Roering Olvide Nolbrock Klishordin	Acgan Creek Mericas Pess Mineral Creek North Fork Jocko Spotted Bear Mountain	Strewoerry Lake Trinkus Lake Twin Creeks Upper Nolland Lake	CLARK FORK RIVER	Black Pine Copper Creek	Cotter Mine Coyote Nill El Dorado Mine	Fred Burn Pess Gold Creek Lake	Noodoo Creek Intergaerd	Lubrecht Forest No. 3 Lubrecht Forest No. 4 Lubrecht Forest No. 6 Red Lion Skelksho Suzalt Slide Rock Munitain Scottener Munitain	Spring Culch Spring Culch Storm Lake Stuart Mill Stuart Wountein TV Mountein	BITTERROOT RIVER	East Fork N. S. Gibbons Pass Lost Norses New Perce Camp New Perce Camp	ST. MARY RIVER 84 Icoberg Lake No. 3	Josephine Lower No. 9 Fount Allen No. 7 Piegan Pass No. 6 Pierrigen No. 8		BEAVERHEAD RIVER Bloody Dick Carter Greek Elbhorn Springs Gold Stortings Likeview Carpon Likeview Carpon Likeview Ridge Likel Pass Trail Greek White Pine Ridge

AS OF APRIL 1, 1965

(1000 Acre Feet)

		FORECAST FORECAST PERCENT		MEASURE	FLOW	
NO.	RIVER AND FORECAST POINT	PERIOD	THIS YEAR	AVERAGE	LAST YEAR*	AVERAGE
	001	IMIDIA DITIED	DACTN			
	COL	UMBIA RIVER	BASIN			
	FISHER RIVER					
3020	Jennings (near)	Apr-Sept	328	103		318
		Apr-July	312	103		302
2020	KOOTENAI RIVER		d200	7.00	<b>7</b> 000	doo/
3030	Libby (at)	Apr-Sept	8300 7200	102 103	7802 6745	8096 7010
3050	Leonia (at)	Apr-July Apr-Sept	9600	103	9037	9327
3030	Leonia (at)	Apr-July	8450	103	7842	8179
	NORTH FORK FLATHEAD RIVER	Apr -oury	0470	10)	1042	011)
3555	Columbia Falls (near)	Apr-Sept	2430	120	2232	2027
2,,,,	002100024 24225 (11041)	Apr-July	2210	120	2044	1844
		Apr-June	1870	120	1746	1565
	MIDDLE FORK FLATHEAD RIVER	•				
3585	West Glacier (near)	Apr-Sept	2300	120	2440	1923
		Apr-July	2130	120	2260	1785
		Apr-June	1820	120	1929	1521
0/0-	SOUTH FORK FLATHEAD RIVER					
3625	Columbia Falls (nr)(17)	Apr-Sept	2900	122	2595	2381
		Apr-July	2760	122	2431	2262
	EI AMIE AD DITTED	Apr-June	2430	122	2112	1988
3630	FLATHEAD RIVER Columbia Falls (at)(17)	Ann Cont	7700	120	77.00	6107
0000	columnia rails (ac)(17)	Apr-Sept Apr-July	7800 7250	120 120	7389 6841	6497 6028
		Apr-June	6230	120	5836	5185
3720	Polson (near)(18)	Apr-Sept	9250	119	8553	7778
5120	1011011 (110a1 ) (110)	Apr-July	8600	119	7854	7229
		Apr-June	7350	119	6629	6188
	SWAN RIVER	<u>r</u>		/	,	
3700	Big Fork (near)	Apr-Sept	840	121	706	694
		Apr-July	740	121	615	614
		Apr-June	610	121	482	503
0.1.0.0	BLACKFOOT RIVER					
3400	Bonner (near)	Apr-Sept	1380	133	1105	1036
		Apr-July	1250	133	1004	938
	FITH COPEY	Apr-June	1080	133	870	812
3301	FLINT CREEK  Rouldon Crook (bolov)(13)	A	00 /	107	00 7	72 0
	Boulder Creek (below)(13)	Apr-Sept	88.6	121	88.7	73.0
	MIDDLE FORK ROCK CREEK	Apr-July	71.7	121	72.5	59.1
3320	Philipsburg (near)	Apr-Sept	100	128	86.9	77.8
55.40		Apr-July	90	128	77.9	70.5
(12) 0	The transfer of the transfer o	inproduct,	, ,	~0	110/	100)

<sup>(13)</sup> Sum, Flint Creek at Maxville and Boulder Creek at Maxville.

<sup>(17)</sup> Adjusted for storage in Hungry Horse Reservoir.

<sup>(18)</sup> Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.

<sup>- /. -</sup>



					(1000	Acre Feet)
		FORECAST	FORECAST	PERCENT	MEASURE	D FLOW
NO.	RIVER AND FORECAST POINT	PERIOD	THIS YEAR	AVERAGE	LAST YEAR*	AVERAGE
	CLARK FORK RIVER					
3404	Milltown (above)(14)	Apr-Sept	1000	125	1025	802
		Apr-July	880	125	902	705
	,	Apr-June	760	125	769	605
3405	Missoula (above)	Apr-Sept	2380	130	2130	1838
		Apr-July	2130	130	1906	1642
	,	Apr-June	1840	130	1639	1417
3530	Missoula (below)	Apr-Sept	4385	129	3861	3391
		Apr-July	3995	129	3483	3088
	, ,	Apr-June	3460	129	2935	2670
3545	St. Regis (at)	Apr-Sept	5900	127	5033	4642
		Apr-July	5400	127	4534	4230
		Apr-June	4680	127	3826	3671
3890	Plains (near)(18)	Apr-Sept	15500	121	13905	12793
		Apr-July	14200	121	12618	11736
		Apr-June	12200	121	10581	10077
3920	Whitehorse Rapids (at)(19)	Apr-Sept	17400	121	15512	14398
		Apr-July	15900	121	14045	13187
		Apr-June	13700	121	11801	11318
2105	WEST FORK BITTERROOT RIVER		221	/		
3425	Conner (near)(15)	Apr-Sept	226	126		179
	DTMMTDDAAM DTIDD	Apr-July	112	126		168
2110	BITTERROOT RIVER					~ 40
3440	Darby (near)	Apr-Sept	745	128	730	582
		Apr-July	695	128	708	542
3528	Mt / + \ (7/)	Apr-June	610	128	600	478
3720	Missoula (at)(16)	Apr-Sept	2005	129	1731	1553
		Apr-July	1865	129	1577	1446
	BLODGETT CREEK	Apr-June	1620	129	1296	1253
3475	Corvallis (near)	Apr-Sept	57.0	128		44.6
2417	ool valilly (moal)	Apr-July	54.5	128		42.6
		Mpr - ourly	1401	120		42.0

<sup>(14)</sup> Difference in observed flow, Clark Fork above Missoula & Blackfoot at Bonner.

<sup>(15)</sup> Adjusted for storage in Painted Rocks Reservoir. (16) Difference in observed flow, Clark Fork above and below Missoula.

<sup>(18)</sup> Adjusted for storage in Hungry Horse Reservoir and Flathead Lake. (19) Adjusted for storage in Hungry Horse, Flathead Lake and Noxon Rapids Reservoirs.



	(1000 Acre Feet)											
		FORECAST	FORECAST	PERCENT	MEASURE	D FLOW						
NO.	RIVER AND FORECAST POINT	PERIOD	THIS YEAR	AVERAGE	LAST YEAR*	AVERAGE						
	мт	SSOURI RIVER	RASTN									
	<u>u.</u>	DDOORT RELVER	DROIN									
	RED ROCK RIVER											
0110	Kennedy Ranch (at)	Apr-Sept	104	145	83.7	71.7						
		Apr-July	96	145	76.8	66.2						
0125	Monida (near)(1)	Apr-Sept	113	144	110	78.4						
		Apr-July	106	144	108	73.7						
	BIG HOLE RIVER											
0255	Melrose (near)	Apr-Sept	957	133	849	718						
	DOUT DED THE	Apr-July	890	133	785	669						
0220	BOULDER RIVER											
0330	Boulder (near)	Apr-Sept	94.6	124	108	76.3						
	JEFFERSON RIVER	Apr-July	90.5	124	103	73.0						
0345	Sappington (at)	A C+	1 200	100	3.007	07.4						
0,747	papping con (at)	Apr-Sept	1300 1160	133	1294	974						
	MADISON RIVER	Apr-July	1100	133	1173	875						
0375	West Yellowstone (near)	Apr-Sept	247	119	216	208						
	most regressione (modif)	Apr-July	187	119	166	157						
0385	Grayling (near)(2)	Apr-Sept	509	121	474	420						
	5 ( ) ( )	Apr-July	399	121	379	330						
0410	McAllister (near)(3)	Apr-Sept	890	124	870	718						
		Apr-July	713	124	712	576						
	GALLATIN RIVER	-		·								
0435	Gateway (near)	Apr-Sept	565	126	551	447						
		Apr-July	480	126	475	381						
0.105	BRIDGER CREEK											
0485	Bozeman (near)	Apr-Sept	25.5	128	23.5	19.9						
	III/AT TIME CORDINA	Apr-July	23.9	128	21.8	18.7						
0500	HYALITE CREEK											
0500	Bozeman (near)(4)	Apr-Sept	46.2	130	45.8	35.6						
	GALLATIN RIVER	Apr-July	40.0	130	40.1	30.8						
0525	Logan (at)	Ann C+	6.20	7.0~	(03	1/~						
0)~)	Dogaii (at)	Apr-Sept	638	137	621	467						
		Apr-July	541	137	523	396						

<sup>(1)</sup> Adjusted for storage in Lima Reservoir.

<sup>(2)</sup> Adjusted for storage in Hebgen Lake.
(3) Adjusted for storage in Hebgen and Ennis Lakes.
(4) Adjusted for storage in Middle Creek Reservoir.



	AS OF A		(1000 Acre Feet)			
		FORECAST	FORECAST	PERCENT	MEASURE	D FLOW
NO.	RIVER AND FORECAST POINT	PERIOD	THIS YEAR	AVERAGE	LAST YEAR*	AVERAGE
	MISSOURI RIVER					
0545	Toston (at)(3)	Apr-Sept	2850	132	2694	2147
		Apr-July	2460	132	2364	1861
0908	Fort Benton (at)(5)	Apr-Sept	4480	135	4848	3319
		Apr-July	3800	135	4165	2825
1095	Virgelle (at)(6)	Apr-Sept	5400	131	6030	4116
		Apr-July	4670	131	5418	3557
1150	Zortman (near)(6)	Apr-Sept	6000	133	6697	4508
1.000	T + T 1 T /2 1/6/	Apr-July	5150	133	5967	3878
1320	Fort Peck Dam (below)(7)	Apr-Sept	6000	136		4422
1 7770	11 3 C D : + ( )/~)	Apr-July	5300	136		3894
1770	Wolf Point (near)(7)	Apr-Sept	6670	136		4879
2200	17:33:-4 N D (. )(d)	Apr-July	5900	136	1 2000	4317
3300	Williston, N.D.(near)(8)	Apr-Sept	15300	138	13999	11059
	PRICKLY PEAR CREEK	Apr-July	13500	138	12852	9828
0615	Clancy (near)	A Cot	26 /	120	25 5	22.0
0015	Clancy (near)	Apr-Sept	26.4 23.0	120	35.5 30.6	19.2
	SUN RIVER	Apr-July	23.0	120	50.0	19.2
0786	Gibson Dam (at)(10)	Apr-Sept	740	121	737	610
0780	GIDSON Dam (at/(10)	Apr-July	680	121	690	559
	TWO MEDICINE CREEK	Whi-agria	080	121	090	227
0920	Browning (near)(20)	Apr-Sept	323	123	303	271
0 %	browning (near)(20)	Apr-July	310	123	289	260
	BADGER CREEK	Apr oury	210	رمد	207	200
0925	Browning (near)	Apr-Sept	167	117	190	143
0,~,	Die miling (negl)	Apr-July	145	117	172	124
	CUT BANK CREEK	mpr ours	147	T-1	112	1~4
0990	Cut Bank (at)	Apr-Sept	159	112	141	142
	(41)	Apr-July	146	112	131	131
	MARIAS RIVER				-2-	
0995	Shelby (near)(9)	Apr-Sept	760	117	814	651
		Apr-July	718	117	777	617
	SOUTH FORK MUSSELSHELL R.	1 0		·		
1185	Martinsdale (above)	Apr-Sept	67.5	138	59.4	48.8
	· · ·	Apr-July		138	57.6	46.6
	MILK RIVER	1	, ,			
1350	Eastern Crossing (at)	Apr-Sept	280	112	280	250
1-1		•				
	Adjusted for storage in Hebger					
	Adjusted for storage in Canyon Adjusted for storage in Canyon			annoina		
(7)	Adjusted for storage in Canyon Adjusted for storage in Canyon				Regentrains	
(7) . (8) .	Adjusted for storage in Canyon Adjusted for storage in Canyon	Forny Til	oer and rol	Pack Pro	ffolo Dill's	and
(3)	najastea for storage in canyon	r retra	or b Long 1	Du.	rato Dili	and

Boysen Reservoirs.

(9) Adjusted for storage in Two Medicine, Four Horns, Lake Francis & Swift Res.

<sup>(10)</sup> Adjusted for storage in Gibson Reservoir and diversions.

<sup>(20)</sup> Adjusted for storage in Two Medicine Reservoir and diversions into Two Medicine Canal.

<sup>- 7 -</sup>

PROVISIONAL DATA FURNISHED BY U.S. GEOLOGICAL SURVEY



					(1000	Acre Feet)
		FORECAST	FORECAST	PERCENT	MEASURE	D FLOW
NO.	RIVER AND FORECAST POINT	PERIOD	THIS YEAR	AVERAGE	LAST YEAR*	AVERAGE
	YELLOWSTONE RIVER					
1915	Corwin Springs (at)	Apr-Sept	2275	121	2128	1877
	• • •	Apr-July	1905	121	1765	1572
1925	Livingston (near)	Apr-Sept	2600	122	2392	2127
	<u> </u>	Apr-July	2170	122	1972	1770
2145	Billings (at)	Apr-Sept	5 <b>0</b> 20	128	4445	3913
		Apr-July	4330	128	3856	3362
3090	Miles City (at)(12)	Apr-Sept	7830	135		5778
		Apr-July	6880	135		5080
3295	Sidney (near)(12)	Apr-Sept	8100	138		5850
		Apr-July	7200	138		5230
	SHIELDS RIVER	-				
1935	Clyde Park (at)	Apr-Sept	144	145	133	99.0
		Apr-July	134	145	121	92.2
	BOULDER RIVER					
2000	Big Timber (at)	Apr-Sept	460	134	375	343
		Apr-July	430	134	351	321
	STILLWATER RIVER					
2050	Absarokee (near)(11)	Apr-Sept	745	135	553	552
		Apr-July	626	135	486	465
	CLARKS FORK RIVER					
2075	Chance (at)	Apr-Sept	690	118	602	583
		Apr-July	622	118	561	528
2085	Edgar (at)	Apr-Sept	725	119	651	609
		Apr-July	642	119	603	538
	ROCK CREEK					
2095	Red Lodge (near)	Apr-Sept	132	128	96.7	103
		Apr-July	102	128	78.7	79.6

<sup>(11)</sup> Adjusted for storage in Mystic Lake.

<sup>(12)</sup> Adjusted for storage in Buffalo Bill and Boysen Reservoirs.



AS OF APRIL 1, 1965 (Inches)										
			(	CURRENT DATA		PAST R				
	SNOW COURSE		DATE	SNOW	WATER	WATER C	ONTENT			
NO.	NAME	ELEVATION	OF SURVEY	DEPTH	CONTENT	LAST YEAR	AVERAGE			
		COLUMBIA	RIVER B	ASTN						
		0020110211		210211						
KOOTENAI	RIVER									
15B11	Baree Creek	5500	4/1	115	48.1	56.3	50.5			
15B15	Baree Trail	3800	4/1	29	10.6	- -	-			
14A04	Brush Creek	5000	3/30	43	13.7	13.4	14.3*			
BC 10	Fernie	3500	4/1	33	13.1	9.3	9.5			
BC 12A	Field	4200	3/28	25	8.1	3.1	5.4			
BC 11	Glacier	4100	4/2	66	25.8	27.9	27.6			
14A11	Graves Creek	4300	3/31	61	21.8	_	_			
BC 43	Gray Creek	5100	4/1	57	19.9	18.6	19.7			
BC 33	Kicking Horse	5400	3/28	52	15.8	13.4	14.8			
BC 20B	Kimberley	3800	3/31	28	10.6	7.7	7.7			
BC 32	Marble Canyon	5000	3/29	52	15.2	11.9	13.8			
BC 10B	Morrissey Ridge	6100	,			-	-			
BC 10A	New Fernie	4100	4/1	51	20.1	16.3	15.4*			
15A01	Red Mountain	6000	4/1	58	22.1	18.0	21.4			
BC 8A	Sinclair Pass	4500	3/29	20	4.6	4.0	5.4			
BC 20A	Sullivan Mine	5100	3/30	49	15.6	11.9	15.6			
BC 41	Upper Elk River	4400	3/28	31	9.7	6.4	8.2			
14A07	Weasel Divide	5450	3/31	98	40.0	36.8	34.1			
FLATHEAD	RIVER									
14B03	Bassoo Peak	5150	3/29	44	12.6	11.6	13.4*			
13A11	Beaver Lake	5900	3/30	79	30.9	22.8	_			
13B03	Big Creek	6750	4/1	121	51.6	47.4	46.4			
13A17	Camp Misery	6400	3/30	140	61.0	51.1	7			
13A02	Desert Mountain	5600	3/29	57	21.9	17.2	16.9			
13B04	Fatty Creek	5500	4/1	69	25.6	26.6	-			
14A09	Griffin Creek Divide	5150	3/31	41	13.2	11.8	14.3*			
13B12	Gunsight Lake	6300	3/30	118	50.9	41.0	- 22 2			
14A03	Hell Roaring Divide	5770	3/31	95	39.5	35.8	32.3			
13B13	Holbrook	4530	3/30 3/30	40 36	14.5 12.0	13.8 10.6	10.4* 10.4			
14A06	Kishenehn	3890 4300	3/30	31	9.5	8.2	9.5			
14A05	Logan Creek	5250	3/30	76	26.8	16.4	20.1			
13A05 13A16	Marias Pass Mineral Creek	4000	3/30	76	26.6	22.8	22.9			
13B07	North Fork Jocko	6330	4/2	129	55.0	53.3	46.7			
13B07	Spotted Bear Mountain		3/30	53	19.9	17.3	15.5			
13A10	Strawberry Lake	5600	3/31	129	54.6	44.8	44.7			
13B01	Trinkus Lake	6500	3/31	129	54.2	46.3	44.2*			
13B11	Twin Creeks	3580	3/31	35	15.9	16.0	12.1*			
13B05	Upper Holland Lake	7000	3/31	108	45.0	39.0	36.3*			
	• •									



		AU UI R	ولد تللللة	1907			(inches)
		(	(	URRENT DATA		PAST R	ECORD
	SNOW COURSE		DATE	SNOW DEPTH	WATER CONTENT	WATER C	ONTENT
NO.	NAME	ELEVATION	SURVEY	DETTR	CONTENT	LAST YEAR	AVERAGE
CLARK FO	ORK RIVER						
13013 12B10 12B11 13B10 13009 13011 13010 14010 15001 13004 15B02 13021 13022 13008 13012 13003 13002 13005 13018 13007 13006 13001 14B01	Black Pine Copper Creek Cotter Mine Coyote Hill El Dorado Mine Fred Burr Pass Gold Creek Lake Heart Lake Trail Hoodoo Creek Intergaard Lookout Lubrecht Forest No. Lubrecht Forest No. Lubrecht Forest No. Red Lion Skalkaho Summit Slide Rock Mountain Southern Cross Spring Gulch Storm Lake Stuart Mill Stuart Mountain TV Mountain	4 4650	4/1 3/29 3/29 4/2 3/30 4/1 4/1 4/1 3/29 3/27 3/27 4/2 4/1 3/31 4/1 3/27 4/2 4/1 3/27 3/28	53 54 62 39 78 87 62 66 130 34 108 41 17 22 65 86 59 29 54 57 29 69	19.4 18.8 22.6 13.8 30.2 36.2 22.3 24.9 55.6 10.7 41.0 10.2 4.6 6.5 24.1 35.7 20.8 9.1 17.2 20.0 8.2 37.4 23.2	16.0 15.6 17.6 10.8 22.2 27.2 18.1 49.8 9.5 41.6 8.5 6.0 17.2 26.4 16.4 8.0 15.9 14.6 7.6 34.4 19.6	14.6* - 11.0 22.6* 29.0* 17.0* - 53.4 8.5* 40.5 8.2* 3.5* 17.5* 27.4 16.0 7.0* 12.5* 15.5 7.5* 32.6 18.7*
BITTERR	OOT RIVER						
13C16 13D01 13D02 14D03 14C05 14C07 13D16 14D02 14D01 13D22 14C04 14C08	Ambrose East Fork R. S. Gibbons Pass Kit Carson Lolo Pass Lost Horse Moose Creek Nez Perce Camp Nez Perce Pass Saddle Mountain Savage Pass Twin Lakes	6480 5400 7100 5020 5230 5940 6200 5580 6570 7940 6600 6510	3/31 4/2 3/28 3/29 3/26 3/30 3/27 3/29 3/29 4/2 3/25 3/30	52 27 85 41 100 100 67 64 66 83 85 128	17.6 8.4 30.5 12.6 37.9 38.4 24.6 20.3 23.3 32.6 32.1 54.6	14.4 8.6 23.3 12.4 36.6 39.6 20.5 19.9 21.0	14.3* 7.7 25.0 9.0 36.4* 35.6* 17.1 15.8 18.3 - 30.5* 46.7*



**AS OF** APRIL 1, 1965

	tinches)											
				URRENT DATA	\	PAST	RECORD					
	SNOW COURSE		DATE	S#OW DEPTH	WATER	WATER	CONTENT					
NO.	NAME	ELEVATION	SURVEY	DEFIN	CONTENT	LAST YEAR	AVERAGE					
		MISSOURI	RIVER BA	SIN								
BEAVERHI	EAD RIVER											
13D10 11E11 12E03 12D04 13E22 13D15 13D09 11E12 11E04 11E03 13E01 13E01 13E02 12E01	Bloody Dick Blue Ledge Mine Camp Creek Carter Creek Dad Creek Lake Elk Horn Springs Gold Stone Kilgore Lakeview Canyon Lakeview Ridge Lemhi Pass Trail Creek White Pine Ridge	7600 6700 6800 7400 8400 7800 8100 6200 6930 7400 7480 7090 8850	3/30 3/28 3/29 3/28 3/23 3/29 3/30 3/28 3/30 3/30 3/29 3/29 3/30	50 49 38 34 61 49 62 33 54 48 49 46 30	16.6 18.0 12.7 7.4 20.4 15.2 21.2 10.9 19.4 17.0 15.3 14.2 6.7	10.6 14.5 9.1 4.9 - 8.3 14.7 11.0 9.3 8.6 9.0 8.4 6.8	11.7 16.7 10.4 - 10.4 15.3 10.0 10.8 9.7 9.2 8.8 5.9					
RUBY RIV	VER											
11D08 12E07 12E06	Clover Meadow Divide Notch	8600 7900 8500	3/30 3/30 3/30	62 49 53	22.4 15.7 17.7	16.8 10.4 13.8	- - -					
BIG HOL	E RIVER											
13D20 13D19 13D21 13D08	Abundance Lake Darkhorse Lake Foolhen Jahnke Creek	8800 8600 8280 7340	3/30 3/30 3/30 3/30	75 89 67 43	26.7 36.4 23.1 13.2	20.6 26.4 17.5 8.6	- - - 11.2					
<u>JEFFERS</u>	ON RIVER											
12007 12006	Berry Meadow Picnic Grounds	7300 6500	4/2 4/1	35 20	9.5 5.2	7.4 5.1	- 4.8*					

7200

Pipestone Pass

12D01

24

6.2

4.0

6.2



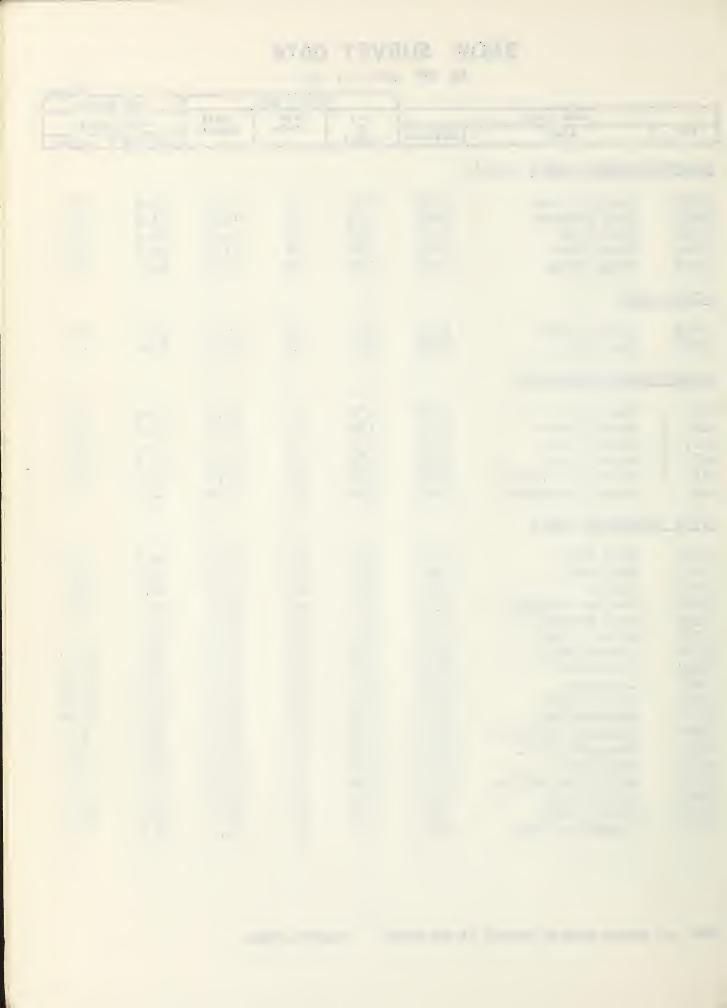
**AS OF** APRIL 1, 1965

			<del></del>	CHOOSHY DAYA			(thenes)
	SNOW COURSE		DATE	CURRENT DATA	WATER		RECORD
NO.	NAME	ELEVATION	0F	DEPTH	CONTENT		ONTENT
MADISON		1 222771011	SURVEY	<u> </u>		LAST YEAR	AVERAGE
11E09 11D07 11D06 11D12 11E05 11E10 11D05 11D11 10E02 11D03 11E21 11E20 11E08 11E07	Big Springs Call Road Crockett Lake Four Mile Hebgen Dam Island Park Jack Creek Lower Twin Norris Basin North Meadow Potomageton Park Sentinel Creek Valley View West Yellowstone	6500 8050 8400 6900 6550 6315 7500 7900 7500 7150 8300 6500 6700	3/29 3/30 3/31 3/28 3/29 4/1 3/31 3/28 3/31 4/2 4/2 3/29 3/29	68 47 46 38 48 55 22 75 50 45 52 81 65 48	26.3 13.9 13.8 11.2 15.2 20.8 7.0 28.8 14.6 13.7 18.5 30.9 25.9 14.8	21.8 12.7 12.2 -13.6 15.9 4.3 -11.1 6.4 -	22.6 - - 12.2 17.6 - 9.9* - 16.4 11.7
GALLATII	N RIVER		·				
10D14 11D09 10D15 10D04 10D03 11D10 10D01 11E06	Arch Falls Bear Basin Bridger Bowl Devil's Slide Hood Meadow Little Park New World Twenty-One Mile	7350 8150 7250 8100 6600 7400 6700 7150	3/26 3/25 4/1 3/26 3/26 3/25 3/25 3/28	52 71 79 83 46 58 47 73	16.0 25.8 33.0 29.8 13.5 19.9 13.8 27.2	14.2 22.6 25.6 12.6 17.6 14.6 18.5	- - 22.3 10.0 - 10.8 18.2
MISSOUR:	I RIVER (Main Stem)						
11CO1 12CO5 10CO7 10CO2 10CO1 9AO1 12CO1 12CO2 12CO3 12CO4	Boulder Mountain Chessman Reservoir Elk Peak Grasshopper Kings Hill Rocky Boy Stemple Pass Ten Mile Lower Ten Mile Middle Ten Mile Upper	7950 6200 8000 7000 7500 5200 6600 6600 6800 8000	3/29 3/30 3/30 3/30 3/30 3/31 4/1 3/30 3/31 3/31	65 25 65 28 56 26 45 40 49 60	20.8 6.1 23.0 6.7 17.0 7.1 13.8 10.5 15.1 20.6	21.2 7.4 19.4 8.4 16.7 6.3 12.9 8.0 12.5 16.7	- 4.9 - 5.7 13.6 4.3 11.0 7.2 11.2 14.3
13A15	Badger Pass	6900	3/30	107	44.5	39.6	_
12B06 12B09	Cabin Creek Five-Bull	5200 5700	3/30 3/30	37 35	12.4	8.9 5.8	7.0* 7.1*

- 12 -

NOTE: ALL AVERAGES BASED ON 1948-1962 (15 YEAR PERIOD). \*ADJUSTED AVERAGE

	AS OF A	PRIL 1,				(Inches)
					PAST	RECORD
		DATE OF		WATER	WATER CONTENT	
NAME	ELEVATION	SURVEY			LAST YEAR	AVERAGE
SUN-TETON-MARIAS RIVERS (cont'd)						
Freight Creek Goat Mountain West Fork Wrong Creek Wrong Ridge	6000 7000 6000 5700 6800	3/29 3/31 3/29 3/30 3/30	65 51 64 59 72	24.2 16.2 24.4 21.8 29.1	15.2 11.5 14.2 16.8 22.0	17.0 12.3 16.9* 15.8* 22.2*
IVER						
Crystal Lake Spur Park	6100 8000	4/1 3/31	50 74	16.1 27.5	17.7 25.4	12.2
EWAN (BOW) RIVER						
Bow River North Course Lake Louise Mirror Lake Misc. Lake Louise Mount Eisenhower	5100 5400 5800 6600 5700 5000	3/30 3/29 3/30 3/30 3/30 3/29	41 39 43 49 49 26	11.2 10.2 13.3 14.9 12.7 5.9	5.4 6.0 7.4 7.6 7.0 2.8	9.2 9.1 10.9 13.1 11.7
LLOWSTONE RIVER						
Bald Ridge Camp Senia Canyon Crevice Mountain East Entrance Grizzly Peak Independence Lake Camp Lodgepole Lupine Creek Monument Peak Northeast Entrance Porcupine R. S. Sacajawea South Fork Shields Sylvan Pass Thumb Divide	7500 7890 7750 8400 7000 8400 8000 7850 8200 7300 9000 7400 6500 6550 8100 7100 7900	3/26 4/2 3/31 4/1 3/25 4/1 3/26 3/31 4/2 3/26 3/26 3/26 3/25 3/26 3/25 3/26	52 32 61 42 38 63 70 48 43 50 91 47 38 55 80 54 87 63	16.6 9.6 23.4 11.7 10.1 20.6 24.3 15.0 12.1 13.6 34.2 13.5 10.4 18.4 30.5 16.3 32.1	14.8 6.6 16.1 10.6 11.6 12.7 18.0 9.1 11.8 8.7 24.6 9.6 10.5 15.0	11.7* 6.3 16.3 9.5 11.3* - 19.2* 11.1 11.8* 11.2 23.0* 9.3 7.7 13.0* - 14.9 24.2 14.1*
	Freight Creek Goat Mountain West Fork Wrong Creek Wrong Ridge  IVER  Crystal Lake Spur Park  EWAN (BOW) RIVER  Bow River North Course Lake Louise Mirror Lake Misc. Lake Louise Mount Eisenhower  LLOWSTONE RIVER  Bald Ridge Camp Senia Canyon Crevice Mountain East Entrance Grizzly Peak Independence Lake Camp Lodgepole Lupine Creek Monument Peak Northeast Entrance Porcupine R. S. Sacajawea South Fork Shields Sylvan Pass	NAME   ELEVATION	SNOW COURSE	CURRENT DATE   SHOW COURSE   SHOW DEFTH	CURRENT DATA   SNOW COURSE   ELEVATION   SNOW COURSE   S	CURRENT DATA   PAST   SHOW COURSE   ELEVATION   SURVEY   DATE   CONTENT   CONTENT



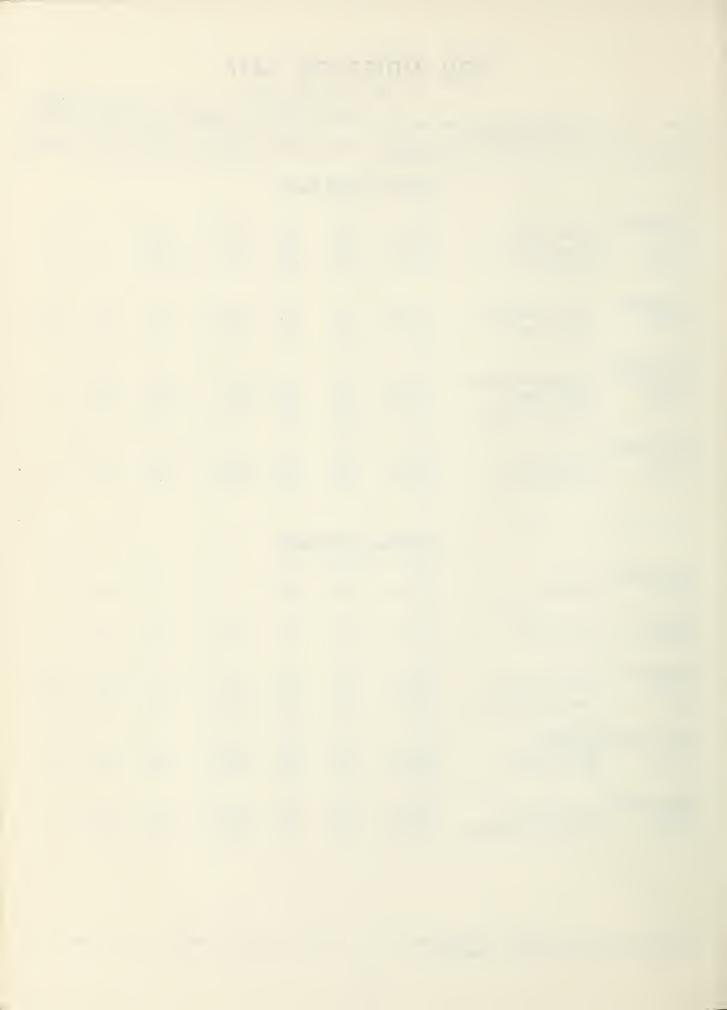
# SOIL MOISTURE DATA

AS OF APRIL 1, 1965

(Inches)

								(Inches)
			SOIL	ROFILE	CURREN	T DATA	PAST	RECORD
110	SOIL MOISTURE STATION	I ELEVATION	DEPTH	FIELD	DATE OF	SOIL MOISTURE	LAST YEAR	**AVERAGE
NO.	NAME	ELEVATION		John Hotti	SURVEY		. 531,	L
		COLUMBIA	RIVER	BASIN				
Kootenai								
15B15M	Baree Trail	3800	48	7.5	4/1	6.2	_	_
14AlOM	Murphy Lake R. S.	3000	48	22.6		22.3	-	-
15A02M	Raven R. S.	3050	48	23.0	4/1	21.0	-	-
Flathead								
13A02M	Desert Mountain	5600	54	8.4	3/29	7.8	5.9	7.4
13A05M	Marias <b>P</b> ass	5250	54	6.5		5.7	4.5	5.4
Clark Forl	k							
13C15M	Georgetown Lake	6450	48	9.0*	4/2	3.2	2.5	_
13B19M	Seeley Lake	4030	48	11.9*		10.0	3.0	-
13CO2M	Skalkaho Summit	7260	48	10.8	4/1	8.9	-	-
Bitterroot	t							
13D18M	Gibbons Pass	7100	48	7.1	4/2	5.4	5.5	-
14CO5M	Lolo Pass	5250	48	10.6*	3/26	7.2	5.4	-
		\/T400!!D7		D / GT11				
		MISSOURI	RIVER	BASIN				
Beaverhead		,						
11E13M	Lakeview	6700	48	15.3			8.8	-
Madison								
10D04M	Red Bluff	4800	40	4.7	3/31	2.3	3.3	-
Gallatin								
11DO2M	College Site	4856	54	14.5	4/2	10.4	12.1	11.2
11E06M	Twenty-One Mile	7150	48	8.8	3/27	1.6	3.6	_
Mi ======								
Missouri N 10C0lM	<u>Main Stem</u> Kings Hill	7420	48	11.8	3/31	8.2	7.8	
12C08M	Stemple Pass	6230	48 48	5.9	3/30	4.2	4.7	_
	-				-, -			
Yellowstor 10D11M	<u>le</u> Battle Ridge	6020	48	17.6*	3/25	15.4	9.9	
10D11M 10D07M	Northeast Entrance	7350	46 48	9.4	3/28	5.8	9.9 8.0	_
	diidd d Eifel diidd	, 5,70	40	, •~·	5,	,,,		

<sup>\*\*</sup>AVERAGE FOR PERIOD OF RECORD \*Revised



### RESERVOIR STORAGE DATA

AS OF MARCH 31, 1965

(1000 Acre Feet)

		USEABLE STORAGE						
BASIN	RESERVOIR	USEABLE CAPACITY	THIS YEAR	LAST YEAR	AVERAGE			
COLUMBIA RIVER BASIN								
Flathead	Hungry Horse Flathead Lake Camas 1/	3,428.0 1,791.0 45.2	1,567.0 958.1 22.0		2,244.4** 690.8 33.8			
Clark Fork	Mission Valley <u>2</u> / Georgetown Lake Noxon Rapids	100.3 31.0 334.6	37.7 23.9 150.4	22.6 25.6 155.2	37.2 21.8			
Bitterroot	Como Painted Rocks	34.9 31.7	17.2		13.4 15.1**			
MISSOURI RIV	VER BASIN							
Beaverhead	Clark Canyon Lima	255.6 84.0	85.7 46.3	- 15.0	- 27.3			
Ruby Madison	Ruby Hebgen Lake Ennis Lake	38.8 384.8 41.0	224.4 14.4	211.3 39.2	26.1** 179.1 36.4			
Gallatin Missouri	Middle Creek Canyon Ferry Hauser & Helena	8.0 2,043.0 61.9	4.0 1,643.0 57.9	3.2 1,726.0 52.5	3.9** 1,529.0** 44.8			
	Lake Helena Holter Lake	10.4 81.9	9.0 15.0	7.2 22.9	5.6 51.7			
	Smith River Ackley Lake Durand	10.7 5.8	8.8 - 4.8	7.6 -	6.5** 3.8			
	Martinsdale Deadman's Basin	7.0 23.1 72.2	6.8 7.3 52.7	4.5 7.6 55.0	4.9 8.8 41.6**			
Sun	Fort Peck Gibson Willow Creek	19,410.0 105.0 32.3	15,250.0 49.8 16.1	11,700.0 17.9 21.2	10,875.4 60.5 21.0			
Marias	Pishkun Lower Two Medicine	32.0 16.6	17.1	17.1	18.2 0.0			
141 240	Four Horns Swift	19.2 30.0	- -	- 11.9	10.5 23.9			
Milk	Lake Francis Tiber Fresno	112.0 1,313.0 127.2	84.8 691.8 83.3	34.3 650.9 36.6	92.8 647.4** 81.5			
11777	Nelson Lake Sherburne	66.8 66.1	33.9 18.7	30.0 18.4	34.9 24.4			
Yellowstone	Mystic Lake Tongue River	20.8 68.0	4.8 -	5.7	4.8 21.1			
	Cooney	27.5	14.8	19.1	13.5**			

 $<sup>\</sup>frac{1}{2}$  Sum of four small reservoirs on west side of Flathead Lake.  $\frac{2}{2}$  Sum of eight small reservoirs in Mission Valley not including Jocko Lake.



### Agencies Cooperating in Collecting Data Contained in this Bulletin

- U. S. Forest Service Region I, Missoula, Montana
- U. S. Geological Survey Helena, Montana
- U. S. Army Corps of Engineers Portland, Oregon Seattle, Washington Omaha, Nebraska
- U. S. Indian Irrigation Service St. Ignatius, Montana
- U. S. Weather Bureau Helena, Montana
- U. S. Bureau of Sports Fisheries and Wildlife Red Rock Lakes Refuge Monida, Montana
- U. S. Bureau of Reclamation Billings, Montana Boise, Idaho
- Montana Power Company Butte, Montana
- Agricultural Experiment Station North Montana Branch Station Havre, Montana
- State Water Conservation Board Helena, Montana
- National Park Service Yellowstone National Park Glacier National Park

- Montana Experiment Station Montana State College Bozeman, Montana
- Bonneville Power Administration Portland, Oregon
- Montana State University School of Forestry Missoula, Montana
- Soil Conservation Service Montana, Wyoming, Idaho
- Soil and Water Conservation Districts
  Montana Counties
- Johnson Flying Service, Inc. Missoula, Montana
- Water Rights Branch, Dept. of Lands and Forests Victoria, British Columbia
- Department of Northern Affairs and National Resources Calgary, Alberta
- State Engineer Helena, Montana

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